

Other Issues
(Issues 21-23)

Power Factor Charge

21. Should the power factor charge be increased in order to provide a stronger incentive for low power factor customers to correct their power factor?

Background

Power factor is the ratio of working power to working plus magnetizing power. The magnetizing power is called reactive power. Reactive power is consumed by some electrical equipment, such as motors and generators, that need magnetic fields for operation. It is power the utility must provide but which is not billed as either kW or kWh under normal demand and energy rates. The existence of reactive loads on the system not only requires City Light to have more capacity available than would otherwise be the case, but also causes voltage control problems unless corrective equipment is installed. Such corrective equipment (capacitors) can be installed by either the utility or the customer.

City Light has imposed a special charge on customers with low power factors since 1944. Low-power-factor customers are currently charged a rate of 0.14¢ per kilovolt-ampere reactive hour (kVarh) for any billing period in which their power factor is below City Light's standard of 0.97 (out of a maximum of 1.0). The current rate ordinance also states that City Light "...shall not be obligated to deliver electricity to the customer at any time at a power factor below 0.85".

City Light's power factor rate has been calculated to cover the cost of capacitors which City Light must install for voltage control—because customers with low power factor have not done so at their own expense. A customer who does install such equipment avoids the power factor charge. About 1,300 commercial and industrial customers currently have power factor metering installed. The current power factor charge does not take into account the cost of the additional capacity City Light must provide in order to supply power to customers with low power factors.

City Light's current power factor charge is quite low and does not provide a strong incentive for customers to correct their own power factor. If they had a higher rate incentive, they might then install their own capacitors and City Light could not only avoid the expense of voltage control capacitors but also reduce its need for increased system capacity.

Alternatives:

1. Maintain the power factor rate at a level sufficient to cover City Light's cost of capacitors (current practice).

2. Increase the power factor rate such that customers requiring reactive power have an incentive to correct it themselves. Options for increasing the rate include:
 - a. Increase the rate per kVarh based on a calculation of City Light's capacitor cost plus some amount for increased capacity throughout the system.
 - b. Increase the amount of kW billed with a power factor adjustment, e.g., 1,000 kW recorded/.90 power factor = 1,111 kW billed.
 - c. Bill based on number of kVa recorded instead of kW.